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UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE RO

REPLY TO: 3420 Pest Management Evaluation DATE: December 3, 1985

SUBJECT: Efficacy of Soil Seal Concentrate for reducing soil cone formation in nursery beds at Humboldt Nursery (Report No. 85-32)

TO: Forest Supervisor, Six Rivers National Forest

In previously reported trials (reference 3430 Evaluation, Report No. 84-39, October 10 1984), a mulch treatment or lath cover reduced soil splash, soil cone formation, and subsequent incidence of Phoma blight in red fir seedlings at Humboldt Nursery. Literature suggested that Soil Seal Concentrate, manufactured by Soil Seal Corporation, may be an alternative method of reducing cone formation. This compound is a latex acrylic copolymer that binds soil particles together and may reduce soil splash in nursery beds. A field trial was initiated in October 1984. The objectives were to determine if Soil Seal Concentrate was effective in reducing or preventing soil cone formation under Humboldt Nursery conditions and, if it was, what concentration was most efficient.

Three concentrations of Soil Seal Concentrate were applied to a bed of 1-0 Douglas-fir in October, 1984. A randomized complete block design -- with 1) no treatment; 2) 60 gal Soil Seal/acre, diluted 40:1; 3) 90 gal Soil Seal/acre, diluted 30:1; and 4) 120 gal Soil Seal/acre, diluted 30:1 as the four treatments -- was used. The experiment was replicated five times. Each replicate covered 20 linear feet of bed (four, 4 X 5 foot plots), with the four treatments randomized in each replicate. Efficacy of treatments was evaluated 2 months after treatment (December, 1984) by 1) determining total height of soil buildup by measuring distance from soil surface to top of cone (randomly, 10 seedlings/plot) in each treatment, and 2) determining height of soil in foliage by measuring distance from lowest foliage to top of cone (randomly, 10 seedlings/plot) in each treatment.
Results of the study are presented in the following table:

EFFECT OF SOIL SEAL CONCENTRATE ON SOIL CONE FORMATION TWO MONTHS AFTER APPLICATION TO A 1-0 BED OF DOUGLAS-FIR SEEDLINGS AT HUMBOLDT NURSERY

TREATMENT	HEIGHT OF SOIL, mm	
	TOTAL	IN FOLIAGE
Control	28[x]	18
60 gal/acre	31	19
90 gal/acre	25	15
120 gal/acre	29	18

[x] Average of measurements on 50 seedlings.

There were no significant differences in degree of soil cone formation among any of the four treatments. The height of soil on seedlings in plots treated with 60, 90 or 120 gal/acre was as great, or greater than on seedlings in the untreated plots. Observations suggested that amount of soil splash was influenced more by seedling density than by the Soil Seal Concentrate treatment. Seedlings in plots with low densities had higher soil cones than seedlings in plots with higher densities, regardless of treatment.

These results indicate that treatment of Humboldt Nursery beds with Soil Seal Concentrate is not an effective method of preventing or reducing soil splash and subsequent soil cone formation. In addition, the cost of Soil Seal Concentrate treatment (about $1000/acre for one application) is probably prohibitive. Treatment of the beds with a mulch in other studies did prevent soil splash and would be more economical. If you have any questions regarding this evaluation, contact John Kliejunas (415-556-6520) of my Staff.

Wilfred L. Freeman Jr.

WILFRED L. FREEMAN, JR.
Director of Forest Pest Management

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no. 85-32.....~~IS MISSING~~

~~MISSING~~: no. 85-32 arrived & inserted Oct 26, 1990